

## Catalogue of American Amphibians and Reptiles.

Camper, J.D. 1996. *Masticophis schotti*.

***Masticophis schotti* (Baird and Girard)**  
Schott's Whipsnake

*Masticophis schotti* Baird and Girard, 1853:160. Type-locality, "Eagle Pass, Tex." Holotype, National Museum of Natural History (USNM) 1972, adult male (943 mm SVL), collected by Arthur Schott, date unknown (examined by author).

*Bascanium schottii*: Cope, 1891:622.

*Zamenis schottii*: Cope, 1900:811 (part).

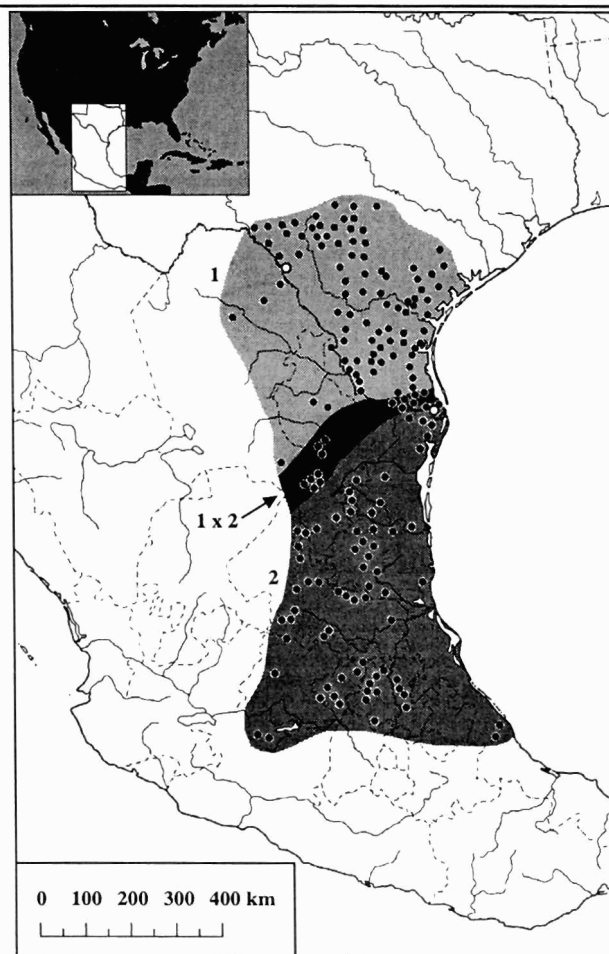
*Coluber schotti*: Stejneger and Barbour, 1917:80 (part).

*Masticophis taeniatus schotti*: Gloyd and Conant, 1934:4.

• **Content.** Two subspecies are recognized, *schotti* and *ruthveni*.

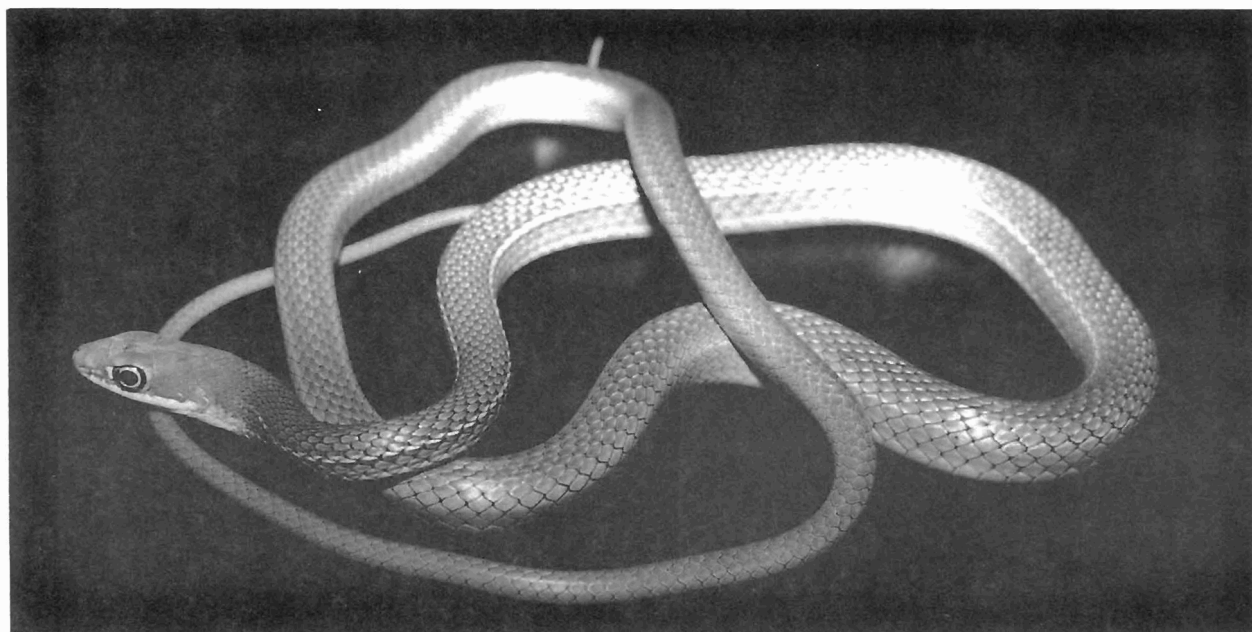
• **Definition.** *Masticophis schotti* is a large (to 1240 mm SVL), long-tailed (to 38% TL) species of whipsnake with 15 anterior and midbody scale rows. Posterior scale rows number 10-13. Males have 181-212 ventrals and 120-166 subcaudals; females have 181-218 ventrals and 113-162 subcaudals. Two preoculars and 2 postoculars are present in most specimens. Temporals number 5-7 and increase in size posteriorly. Supralabials number 6-9 (mode 8), with supralabials 4 and 5 entering the orbit. Infralabials number 8-10 (mode 9) and increase in size posteriorly. One loreal scale and one scale pit are usually present. The eyes are large with prominent supraorbital ridges. Maxillary teeth number 15-21 and increase in size posteriorly. The hemipenis extends 6-13 subcaudals posterior to the vent.

The dorsal and ventral ground color varies from grayish-green to almost solid black. One or two light lateral stripes may be present or absent. The lower stripe occupies the lower half of scale row 1 and the adjacent tips of ventrals. The upper stripe is on the upper half of scale row 3 and the lower half of scale row 4. Paired white, cream, yellow, or orange spots are on the anterior corners of the dorsal scales. Head scales are uniformly dark with no light temporal spot. Red pigmentation occurs im-



**Map.** Distribution of *Masticophis schotti*. Large circles mark type-localities; dots indicate other records.

mediately posterior to the jaw angle and on subcaudals.



**Figure 1.** *Masticophis schotti ruthveni* from Cameron County, Texas. Photograph by Carl S. Lieb.

• **Diagnosis.** This species is the only species of *Masticophis* with 15 dorsal scale rows having both dorsal speckling and red pigment at the angle of the jaw and lacking pale bordering on the head scales.

• **Descriptions.** Thorough descriptions were given by Ortenburger (1928) and Camper and Dixon (1994). Descriptions of one or both subspecies are in Cope (1900), Ortenburger (1923), Smith (1941), Wright and Wright (1957), and Conant and Collins (1991). Ditmars (1936, 1939), Schmidt and Davis (1941), Cochran and Goin (1970), and Behler and King (1979) contain additional descriptive information.

• **Illustrations.** Black and white drawings or photographs are found in most references listed under Descriptions. Color illustrations can be found in Tennant (1984, 1985) and Conant and Collins (1991). Gloyd and Conant (1934) illustrated oviposition and habitat, and Ortenburger (1923, 1928) the hemipenis.

• **Distribution.** This species inhabits arid brush, grassland, desert, and montane forest to elevations of about 2300 m from the Balcones Escarpment of central Texas south on the Gulf Coastal Plain through Tamaulipas to central Veracruz. *Masticophis schotti* occurs west through Nuevo León, eastern Coahuila, San Luis Potosí, Querétaro, and Hidalgo to Guanajuato and Michoacán on the Mexican Plateau. The western limits of its range in northern México are unclear. Range maps are in Morafka (1977), Parker (1982), and Smith and Brodie (1982). Additional information about distribution and habitat are as follows: Texas — Raun (1966), Raun and Gehlbach (1972), Lewis (1974), Karges (1978, 1981), Vermersch and Kuntz (1986), Dixon (1987); México — Smith (1941, 1943), Smith and Taylor (1945), Shannon and Smith (1949), Martin (1958), Duellman (1961), Dixon et al. (1972), and Smith and Smith (1976).

• **Fossil Record.** None.

• **Pertinent Literature.** Comprehensive taxonomic works include those by Ortenburger (1928) and Camper and Dixon (1994). No detailed ecological information exists for this species. Elements of the biology of *M. schotti* which have received attention are biogeography (Smith and Buechner, 1947), use as an outgroup in phylogenetic analyses (Grismer, 1990), dorsal pigmentation as an antipredator strategy (Jackson et al., 1976), vertebral form (Johnson, 1955), morphological character state polarity (Marx and Rabb, 1972; Rabb and Marx, 1973), re-

sponses to toad venom (Licht and Low, 1968), food habits (Camper, 1990), reproduction (Fitch, 1970; McCrystal and Dixon, 1983), and karyotype (Baker et al., 1972).

• **Remark.** This species was included as a subspecies in the *Masticophis taeniatus* account (Parker, 1982), but is addressed separately here because of the change in its taxonomic status (see Comment in the revised *M. taeniatus* account by Camper, 1996).

• **Etymology.** The name *schotti* is a patronym honoring Arthur Schott, collector of the type-specimen and member of the U.S. and Mexican Boundary Survey, and *ruthveni* is a patronym recognizing Alexander G. Ruthven, noted U.S. herpetologist.

• **Comment.** *Masticophis schotti* is in need of a detailed ecological study like that of *M. taeniatus* by Parker and Brown (1980). More specimens from México are needed to pinpoint areas of intergradation between the subspecies.

• **Acknowledgments.** I thank James R. Dixon for help with the literature and the Carnegie Museum of Natural History for permission to use the figure.

### 1. *Masticophis schotti schotti* (Baird and Girard)

*Masticophis schotti* Baird and Girard, 1853:160. See species synonymy.

*Bascanium taeniatum laterale*: Yarrow, 1875:543 (part).

*Zamenis taeniatus schotti*: Boulenger, 1893:391 (part).

*Zamenis taeniatus taeniatus*: Strecker, 1915:36 (part).

*Masticophis taeniatus schotti*: Gloyd and Conant, 1934:4.

*Coluber taeniatus schotti*: Stejneger and Barbour, 1939:106.

*Masticophis schotti schotti*: Camper and Dixon, 1994:1. First use of combination.

• **Definition.** *Masticophis s. schotti* is a subspecies with 15 anterior and midbody dorsal scale rows, paired cream colored pale spots on the anterior dorsal scale corners, and invariably two prominent pale dorsolateral stripes.

### 2. *Masticophis schotti ruthveni* (Ortenburger)

*Masticophis ruthveni* Ortenburger, 1923:2. Type-locality, "Brownsville, Texas." Holotype, University of Michigan Museum of Zoology (UMMZ) 57681, adult male (1104

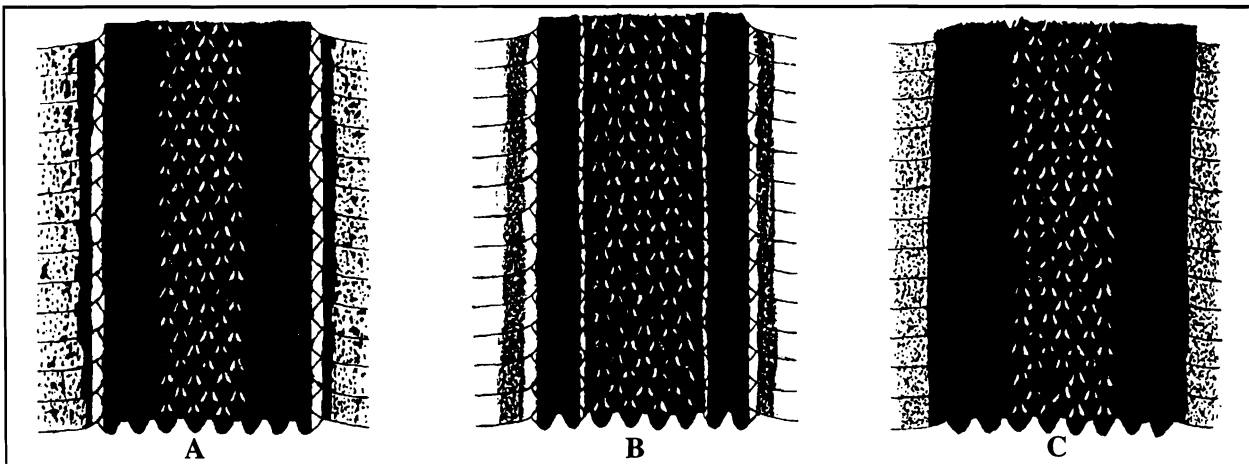


Figure 2. Dorsal pattern of adult *Masticophis schotti ruthveni* (from Camper and Dixon, 1994): (A) two-striped pattern most common throughout the range of this subspecies; (B) four-striped pattern found infrequently throughout the range of this subspecies; (C) rare stripeless pattern.

mm SVL), collected by A.I. Ortenburger, date unknown (examined by author).

*Coluber ruthveni*: Stejneger and Barbour, 1923:88.

*Masticophis taeniatus ruthveni*: Gloyd and Conant, 1934:4.

*Coluber taeniatus ruthveni*: Stejneger and Barbour, 1939:105.

*Masticophis taeniatus australis*: Smith, 1941:390 (part). Type-locality, "Guanajuato." Holotype, National Museum of Natural History (USNM) 10240, juvenile female (358 mm SVL), collected by Alfredo Dugès, 1879 (examined by author).

*Masticophis schotti ruthveni*: Camper and Dixon, 1994:20. First use of combination.

• **Definition.** *Masticophis s. ruthveni* is a subspecies with 15 anterior and midbody dorsal scale rows, paired cream, yellow, or orange dorsal spots, from 0-2 narrow dorsolateral stripes, and a ground color that ranges from green to almost black.

### Literature Cited

- Baird, S.F., and C. Girard. 1853. Catalogue of North American reptiles in the museum of the Smithsonian Institution, Part I. Serpents. Smithsonian Inst. Washington, D.C.
- Baker, R.J., G.A. Mengden, and J.J. Bull. 1972. Karyotypic studies of thirty-eight species of North American snakes. *Copeia* 1972:257-265.
- Behler, J.L. and F.W. King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York.
- Boulenger, G.A. 1893. Catalogue of the snakes in the British Museum (Natural History). Board of Trustees, British Museum, London.
- Camper, J.D. 1990. Systematics of the striped whipsnake *Masticophis taeniatus* (Hallowell). Ph.D. Diss. Texas A&M Univ., College Station.
- . 1996. *Masticophis taeniatus*. Cat. Amer. Amphib. Rept.: 639.1-639.6.
- and J.R. Dixon. 1994. Geographic variation and systematics of the striped whipsnakes (*Masticophis taeniatus* complex; Reptilia: Serpentes: Colubridae). Ann. Carnegie Mus. 63:1-48.
- Cochran, D.M. and C.G. Goin. 1970. The new field book of reptiles and amphibians. G.P. Putnam's Sons, New York.
- Conant, R. and J.T. Collins. 1991. A field guide to reptiles and amphibians of eastern and central North America. 3rd ed. Houghton Mifflin Co., Boston.
- Cope, E.D. 1891. A critical review of the characters and variations of the snakes of North America. Proc. U.S. Natl. Mus. 14:589-694.
- . 1900. The crocodilians, lizards and snakes of North America. Rept. U.S. Natl. Mus. 1898:153-1270 + 36 pl.
- Ditmars, R.L. 1936. The reptiles of North America. Doubleday, Doran and Co., New York.
- . 1939. A field book of North American snakes. Doubleday, Doran and Co., New York.
- Dixon, J.R. 1987. Amphibians and reptiles of Texas. Texas A&M Univ. Press, College Station.
- , C.A. Ketchersid, and C.S. Lieb. 1972. The herpetofauna of Queretaro, México, with remarks on taxonomic problems. Southwest. Nat. 16:225-237.
- Duellman, W.E. 1961. The amphibians and reptiles of Michoacán, México. Univ. Kansas Publ. Mus. Nat. Hist. 15:1-148 + 6 pl.
- Fitch, H.S. 1970. Reproductive cycles in lizards and snakes. Univ. Kansas Mus. Nat. Hist. Misc. Publ. (52):1-247.
- Gloyd, H.K. and R. Conant. 1934. The taxonomic status, range and natural history of Schott's racer. Occ. Pap. Mus. Zool. Univ. Michigan (287):1-17 + 3 pl.
- Grismer, L.L. 1990. Relationships, taxonomy, and biogeography of the *Masticophis lateralis* complex in Baja California, México. Herpetologica 46:66-77.
- Jackson, J.F., W. Ingram III, and H.W. Campbell. 1976. The dorsal pigmentation pattern of snakes as an antipredator strategy: a multivariate approach. Amer. Nat. 110:1029-1053.
- Johnson, R.G. 1955. The adaptive and phylogenetic significance of vertebral form in snakes. Evolution 9:367-388.
- Karges, J.P. 1978. Texas amphibians and reptiles: some new distributional records, part I. Herpetol. Rev. 9:143-145.
- . 1981. Texas amphibians and reptiles: some new distributional records, part III. Herpetol. Rev. 12:68-69.
- Lewis, M.R. 1974. Recent county records and range extensions from southcentral Texas. Herpetol. Rev. 5:21.
- Licht, L.E. and B. Low. 1968. Cardiac response of snakes after ingestion of toad parotoid venom. Copeia 1968:547-551.
- Martin, P.S. 1958. A biogeography of reptiles and amphibians in the Gomez Farias region, Tamaulipas, Mexico. Misc. Publ. Mus. Zool. Univ. Michigan (101):1-102 + 7 pl.
- Marx, H. and G.B. Rabb. 1972. Phyletic analysis of fifty characters of advanced snakes. Fieldiana Zool. 63:viii + 321 p.
- McCrystal, H.K. and J.R. Dixon. 1983. Eggs and young of Schott's whipsnake, *Masticophis taeniatus schotti*. Texas J. Sci. 35:161-163.
- Morafka, D.J. 1977. A biogeographical analysis of the Chihuahuan Desert through its herpetofauna. Biogeographica 9:viii + 313 p + 10 pl.
- Ortenburger, A.I. 1923. A note on the genera *Coluber* and *Masticophis*, and a description of a new species of *Masticophis*. Occ. Pap. Mus. Zool. Univ. Michigan (139):1-14 + 3 pl.
- . 1928. The whip snakes and racers, genera *Masticophis* and *Coluber*. Mem. Univ. Michigan Mus. 1:xviii + 247 p. + 36 pl.
- Parker, W.S. 1982. *Masticophis taeniatus*. Cat. Amer. Amphib. Rept.:304.1-304.4.
- and W.S. Brown. 1980. Comparative ecology of two colubrid snakes, *Masticophis t. taeniatus* and *Pituophis melanoleucus deserticola*, in northern Utah. Milwaukee Pub. Mus. Publ. Biol. Geol. (7):vii + 104 p.
- Rabb, G.B. and H. Marx. 1973. Major ecological and geographic patterns in the evolution of colubroid snakes. Evolution 27:69-83.
- Raun, G.G. 1966. The distribution of whipsnakes (*Masticophis taeniatus*) in Texas. Texas J. Sci. 18:226-227.
- and F.R. Gehlbach. 1972. Amphibians and reptiles in Texas. Taxonomic synopsis, bibliography, county distribution maps. Bull. Dallas Mus. Nat. Hist. (2):ii + 61 p. + 140 maps.
- Schmidt, K.P. and D.D. Davis. 1941. Field book of snakes of the United States and Canada. G.P. Putnam's Sons, New York.
- Shannon, F.R. and H.M. Smith. 1949. Herpetological results of the University of Illinois field expedition, spring 1949. Trans. Kansas Acad. Sci. 52:494-509.
- Smith, H.M. 1941. Notes on Mexican snakes of the genus *Masticophis*. J. Washington Acad. Sci. 31:388-398.
- . 1943. Summary of the collections of snakes and crocodilians made in México under the Walter Rathbone Bacon traveling scholarship. Proc. U.S. Natl. Mus. 93:393-504.
- and E.D. Brodie, Jr. 1982. A guide to field identification of reptiles of North America. Golden Press, New York.
- and H.L. Buechner. 1947. The influence of the Balcones Escarpment on the distribution of amphibians and reptiles in Texas. Bull. Chicago Acad. Sci. 8:1-16.
- and R.B. Smith. 1976. Synopsis of the herpetofauna of Mex-

- ico. Vol. III. Source analysis and index for Mexican reptiles. John Johnson, North Bennington, Vermont.
- and E.H. Taylor. 1945. An annotated checklist and key to the snakes of Mexico. Bull. U.S. Natl. Mus. (187):iv + 239 p.
- Stejneger, L. and T. Barbour. 1917. A check list of North American amphibians and reptiles. Harvard Univ. Press, Cambridge, Massachusetts.
- and —. 1923. A check list of North American amphibians and reptiles. 2nd ed. Harvard Univ. Press, Cambridge, Massachusetts.
- and —. 1939. A check list of North American amphibians and reptiles. 4th ed. Harvard Univ. Press, Cambridge, Massachusetts.
- Strecker, J.K. 1915. Reptiles and amphibians of Texas. Baylor Univ. Bull. 18:1-82.
- Tennant, A. 1984. The snakes of Texas. Texas Monthly Press, Inc., Austin.
- . 1985. A field guide to Texas snakes. Texas Monthly Press, Inc., Austin.
- Vermersch, T.G. and R.E. Kuntz. 1986. Snakes of south central Texas. Eakin Press, Austin, Texas.
- Wright, A.H. and A.A. Wright. 1957. Handbook of snakes of the United States and Canada, Vol. I. Comstock Publ. Assoc., Ithaca, New York.
- Yarrow, H.C. 1875. Report upon the collections of batrachians and reptiles made in portions of Nevada, Utah, California, Colorado, New Mexico, and Arizona, during the years 1871, 1872, 1873, 1874, p. 509-584. *In* G.M. Wheeler, Report upon geographical and geological explorations and surveys west of the one hundredth meridian. Vol. V, Zoology. Engineer Dept., United States Army, Washington, D.C.

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